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August 2001

Armenia

Armenia has no fossil fuel reserves of its own, but could be a potential transit corridor for energy supplies from neighboring countries to world markets.

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GENERAL BACKGROUND

After a severe economic decline in the early 1990's, Armenia is continuing its slow recovery from the collapse of the Soviet Union and the effects of Armenia's six-year war with [Azerbaijan](#). Armenia and Azerbaijan began fighting over Nagorno-Karabakh, an Armenian-populated region in Azerbaijan, in 1988, with fighting escalating after both countries attained independence from the Soviet Union in 1991. Although a cease-fire has been in place since May 1994, the economies of both sides have been hurt by their inability to make substantial progress toward a peaceful resolution.

In 1994, Armenia launched an ambitious International Monetary Fund-sponsored economic program that has resulted in positive growth rates for the past six years, despite an Azerbaijani-led economic blockade of Armenia. Armenia's economy registered strong growth in 2000, with gross domestic

product (GDP) increasing 6.0%, up from 4.3% growth in 1999. Armenia's GDP is expected to grow 6% in 2001 as well. The country also has managed to slash inflation (just 0.4% in 2000) and to privatize most small- and medium-sized enterprises. At its current growth rate, Armenia's absolute GDP will reach the level of 1991, the year of the collapse of the Soviet Union and the central planning economic system, in 2005.

Armenia's lack of fossil fuel reserves, combined with the Azerbaijani blockade, led to chronic energy shortages in Armenia in the early 1990's. However, in 1995, Armenia took the controversial decision to re-open the nuclear power plant at Metsamor, which was closed due to safety fears after the 1988 Armenian earthquake. The energy supplied by the refurbished Unit 2 at Metsamor largely has offset the country's power shortages, although Armenia is under pressure to close the Soviet-designed plant for good by 2004.

OIL

Armenia has no oil production, known reserves, or refineries, making the country completely dependent on imports of refined petroleum products. In addition, because there are no oil pipelines into Armenia, all of the country's petroleum products must be imported by rail or by truck. Since the end of Soviet subsidies, Armenia's oil consumption has dwindled from 48,400 barrels per day (bbl/d) in 1992 to just 5,000 bbl/d in 2000, most of which comes from the Batumi refinery in western [Georgia](#).

The planned "Main Export Pipeline" (MEP) for Caspian region oil is scheduled to pump crude oil from Baku, Azerbaijan to the [Turkish](#) Mediterranean port of Ceyhan. The MEP is not slated to transit Armenian territory, with the intended route bypassing Armenia in favor of Georgia to the north. Armenian officials occasionally have spoken of potential cost savings if the MEP were built through northern Armenia, since it would shorten the export route considerably. However, the lack of a peace agreement between Armenia and Azerbaijan over Nagorno-Karabakh makes this idea extremely unlikely. Azerbaijani officials have dismissed the idea altogether, noting that the route through Georgia already has been decided.

NATURAL GAS

Armenia is reliant on foreign suppliers for its natural gas consumption, which stood at 45.6 billion cubic feet (Bcf) in 1999. Azerbaijan's blockade of Armenia has rendered useless the gas pipeline to Armenia from Azerbaijan, forcing Armenia to import all of its natural gas via the Georgian and [Russian](#) gas pipeline networks to the north. Despite the absence of direct contracts for sale and purchase of gas between Yerevan and Ashgabat, most of the gas that Armenia consumes comes from [Turkmenistan](#) via the private gas trading company Itera.

Gas distribution in Armenia is handled by Armrosgazprom, a closed joint-stock company owned by the Armenian government, Russia's Gazprom, and Itera. In February 2001, Armenia and Russia reached an agreement on Armenia's \$7-million debt for natural gas shipments dating back to 1999, which Itera supplied on Gazprom's behalf. Since Gazprom and Itera owed Armenia their contribution to the incorporation capital of Armrosgazprom, in July 2001, Itera agreed to write off Armenia's gas debt in exchange for the Armenian government transferring its gas pipeline property to the joint enterprise towards Russia's share. Armrosgazprom is set to invest \$6 million from its own funds in 2001 to rehabilitate Armenia's gas industry.

Iran-Armenia gas pipeline

In order to diversify its gas imports (and potentially develop a possible power replacement for the Metsamor nuclear power plant), Armenia and [Iran](#) are pushing ahead with a plan for an 84-mile gas pipeline that will carry gas from northern Iran to Armenia. An initial feasibility study for the 35.3-Bcf capacity pipeline has been completed, and construction is to begin in late 2001. The pipeline, with an estimated cost of \$138 million, would allow Armenia to import gas from Iran, as well as link Iranian and Russian gas transportation systems and allow for possible Iranian gas exports to Europe through the Russian gas grid.

Construction worth \$96 million will take place on Armenia's territory, with Iran to spend \$48 million on construction on its soil. During the first stage of construction, Armenia will lay a 24-mile pipeline section from Megri to Kadzharan in southern Armenia at a cost of \$26 million. The project's main investors will be Gazprom and Itera, and [France's](#) Gaz de France also has announced its intention to invest in the pipeline. An international consortium is being formed to construct the pipeline.

COAL

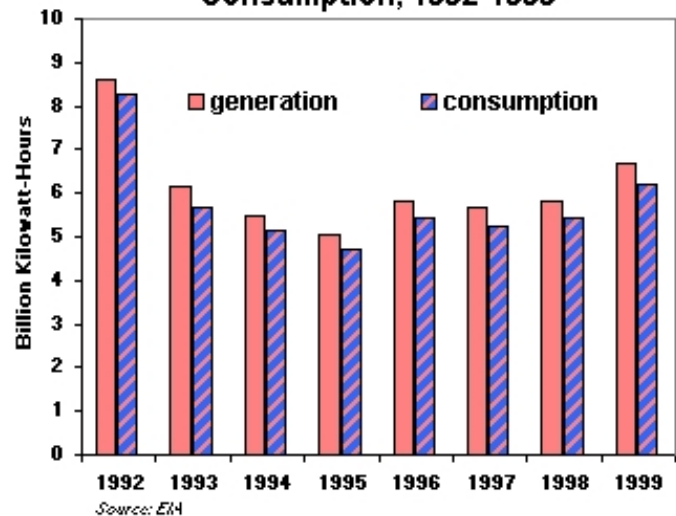
Armenia has no coal reserves or coal production. Armenian coal consumption, most of which is used for home heating, amounted to 5,511 short tons in 1999.

ELECTRICITY

In addition to hydroelectric and nuclear power, Armenia has two large thermal power plants--at Yerevan (550 megawatts, MW) and Hrazdan (1,110 MW)--as well as a smaller plant at Vanadzor (96 MW).

Armenia's total power-generating capacity, as of 1999, was 3.1 gigawatts (GW). However, acquiring fuel for the thermal and nuclear plants remains a challenge, and each of the thermal plants has exceeded its projected operating lifespan and is in need of renovation. In 1999, Armenia generated 6.7 billion kilowatt-hours (Bkwh) of electricity and consumed just 6.2 Bkwh, but since power is not provided to all regions of the country on a regular basis, the country's potential demand for electricity far outpaces supply.

Armenia Electricity Generation and Consumption, 1992-1999



Metsamor Nuclear Power Plant

Armenia shut down its Metsamor Nuclear Power Plant at Yerevan in 1989 because of safety fears after the devastating earthquake that hit the country in 1988. However, faced with an acute energy crisis due to a lack of fossil fuels and the economic blockade by Azerbaijan and Turkey, Armenia made a controversial decision to resume operation at Unit 2 of Metsamor in late 1995. The plant, which was built in 1980 with a design life of 30 years, now supplies about 45% of the country's electricity.

Armenia has been under pressure to close Metsamor because of concerns about the safety of its Soviet-made VVER reactor, the same type of design as the Chernobyl Nuclear Power Plant in [Ukraine](#). The European Union has pressed Armenia to close down Metsamor, which Armenian and Russian nuclear officials have argued could operate through 2016. The Armenian government has pledged to decommission the plant by 2004, provided Armenia has sufficient alternative energy sources by that time. Armenian Energy Minister Karen Galustian said that the country will need up to \$1 billion from foreign investments and donor countries to safeguard Armenia's energy security after closing Metsamor.

Distribution Network Privatization

Since the Armenian government now loses money on electricity that it produces, the country is taking steps to privatize its electricity sector. Armenia began the process of privatization in December 1998, and on July 28, 2000, the Armenian parliament approved a bill to allow the privatization program to proceed. The law cleared the way for the privatization of power transmission lines in Armenia while keeping generation of electric power under government control (several small-scale hydroelectric dams already have been sold to private investors, however).

In addition, the law established two distribution networks, both of which were divided into two sections: one network covers Yerevan and the north of the country, while the second operates in the central and southern regions of Armenia. Following a privatization tender, these newly privatized distribution companies are to purchase electricity from state-owned utilities, such as the Metsamor Nuclear Power Plant, and then distribute the power to consumers.

In an effort to support Armenia's efforts to privatize its power sector, on December 5, 2000, the European Bank for Reconstruction and Development (EBRD) signed an agreement with the government of Armenia to take equity stakes in the four distribution companies. The EBRD purchased 20% of shares in the Yerevan, Northern, Southern and Central networks. The agreement, which lasts for five years, includes a clause giving the Armenian government the right to buy back the EBRD shares should the agreement be abrogated.

However, Armenia's efforts to privatize its state-held electricity distribution networks stalled in April 2001 when Armenian authorities did not receive any bids for the tender of 75% of the shares in all four of the distribution grids. [U.S.](#)-based AES Silk Road, ABB Energy Ventures of Sweden, and [Spanish](#) Union Fenosa Acex had been among the companies initially interested in the energy grid and expected to make an offer. No timetable has been set for a second privatization tender on the distribution networks.

Hydroelectric Power Plans

Hydroelectricity accounted for almost 25% of Armenia's electric power generation in 1999. Armenia has several hydroelectric plants on the Hrazdan River, including the Sevan-Hrazdan hydroelectric plant, and has plans to develop additional hydroelectric projects. Armenia is undertaking a program to construct 38 small and three large hydroelectric power plants with an overall capacity of 296 MW. The cost of this program will be \$300 million, part of which will be financed by the World Bank and the EBRD.

Of the three large hydropower plants, two--Lori Berd and Shnokh--will be built in the Armenian northeast, one with a capacity of 60 MW and an annual output of 192 million kilowatt-hours and the other with a capacity of 75 MW and an annual output of 300 million kilowatt-hours. The third proposed hydropower plant, at Megri on the Araks river on the Armenian-Iranian border, is slated to have a capacity of 78.9 MW and to generate 469 million kilowatt-hours of electricity a year. Armenia and Iran have set up a joint company to construct the Megri hydroelectric power station, which will cost approximately \$60 million and take over five years to build. However, Azerbaijan has objected to the proposed hydropower plant, arguing that its Nakhichevan exclave will have serious problems in water supply if the Megri hydroelectric power station is constructed.

Seasonal Power Imports and Exports

Iran and Armenia already have linked their electricity grids, allowing for power sales in both directions driven by seasonal differences in demand between the two countries. In summer, Armenia exports its power to Iran and gets it back in winter. Closer ties with Iran could give Armenia an additional source of electricity as Iran, Turkmenistan, and Armenia explore whether their power grids can be linked. If so, Armenia could receive electricity from Turkmenistan via Iran's energy system at less than the price of power produced by its own power stations.

Armenia also supplies some of its surplus seasonal electricity to Georgia. In late 1998, Armenia began supplying electricity to Ninotsminda and Gardabani in Georgia by two, 110-kilowatt, power transmission lines. In 2000, Armenia began supplying energy directly to the owner of Tbilisi's power distribution networks--AES-Telasi (U.S.)--rather than to the Georgian government, and AES-Telasi has been paying Armenia regularly for its energy supplies. Power exports from Armenia to Georgia in 2001 have stopped while Georgia has been able to use its own hydropower stations, but by autumn 2001, Armenia likely will resume its supply of electricity to the Tbilisi energy network.

COUNTRY OVERVIEW

President: Robert Kocharyan (since March 30, 1998)

Prime Minister: Andranik Markarian

Independence: September 23, 1991 (from Soviet Union)

Population (12/00E): 3.8 million

Location: Southwest Asia, between Turkey and Azerbaijan

Size: 11,500 sq.miles, slightly larger than Maryland

Major Cities: Yerevan

Languages: Armenian 96%, Russian 2%, other 2%

Ethnic Groups: Armenian 93%, Azeri 3%, Russian 2%, other (mostly Yezidi Kurds) 2% (1989 figures, most Azeris have since left Armenia)

Religion: Armenian Orthodox (94%)

ECONOMIC OVERVIEW

Minister of Finance: Vartan Khachatryan

Currency: Dram = 100 luma

Market Exchange Rate (7/13/01): US\$1 = 554 Dram

Nominal Gross Domestic Product (GDP) (2000E): \$1.9 billion

Real GDP Growth Rate (2000E): 6.0%; **(2001E):** 6.0%

Inflation Rate (Change in Consumer Prices, Dec. 1999-Dec. 2000E): 0.4%; **(2001E):** 5.3%

Official Unemployment Rate (2000E): 11.7%

Current Account Balance (2000E): -\$278 million; **(2001E):** -\$154 million

Major Trading Partners: Russia, Turkmenistan, United States, Georgia, Turkey

Merchandise Exports (2000E): \$307 million; **(2001E):** \$347 million

Merchandise Imports (2000E): \$771 million; **(2001E):** \$721 million

Merchandise Trade Balance (2000E): -\$464 million; **(2001E):** -\$374 million

Major Exports: diamonds, scrap metal, machinery and equipment, cognac, copper ore

Major Imports: natural gas, petroleum, tobacco products, foodstuffs, diamonds

External Debt (12/00E): \$840 million

ENERGY OVERVIEW

Minister of Energy: Karen Galustian

Proven Fossil Fuel Reserves (1/1/01): None

Oil Consumption (2000E): 5,000 barrels per day (bbl/d), all imported

Crude Oil Refining Capacity (1/1/01): None

Natural Gas Production (1999E): None

Natural Gas Consumption (1999E): 45.6 billion cubic feet

Coal Production (1999E): None

Coal Consumption (1999E): 5,511 short tons

Electric Generation Capacity (1999E): 3.1 gigawatts

Electricity Generation (1999E): 6.7 billion kilowatt-hours (Bkwh)

Electricity Consumption (1999E): 6.2 Bkwh

Net Electricity Exports (1999E): 0.5 Bkwh

ENVIRONMENTAL OVERVIEW

Minister of Environmental Protection: Murad Muradian

Total Energy Consumption (1999E): 0.09 quadrillion Btu* (0.02% of world total energy consumption)

Energy-Related Carbon Emissions (1999E): 0.8 million metric tons of carbon (0.01% of world carbon emissions)

Per Capita Energy Consumption (1999E): 24.8 million Btu (vs. U.S. value of 355.8 million Btu)

Per Capita Carbon Emissions (1999E): 0.2 metric tons of carbon (vs. U.S. value of 5.5 metric tons of carbon)

Energy Intensity (1999E): 19,460 Btu/ \$1990 (vs. U.S. value of 12,638 Btu/ \$1990)**

Carbon Intensity (1999E): 0.17 metric tons of carbon/thousand \$1990 (vs. U.S. value of 0.19 metric tons/thousand \$1990)**

Sectoral Share of Energy Consumption (1998E): Residential (34.5%), Industrial (49.9%), Transportation (11.7%), Commercial (3.9%)

Sectoral Share of Carbon Emissions (1998E): Residential (26.5%), Industrial (53.8%), Transportation (16.7%), Commercial (3.0%)

Fuel Share of Energy Consumption (1999E): Natural Gas (48.4%), Oil (9.0%), Coal (0.1%)

Fuel Share of Carbon Emissions (1999E): Natural Gas (79.3%), Oil (20.4%), Coal (0.3%)

Renewable Energy Consumption (1998E): 15.9 trillion Btu* (11% increase from 1997)

Number of People per Motor Vehicle (1998): 500 (vs. U.S. value of 1.3)

Status in Climate Change Negotiations: Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified May 14th, 1993). Not a signatory to the Kyoto Protocol.

Major Environmental Issues: Soil pollution from toxic chemicals such as DDT; energy blockade, the result of conflict with Azerbaijan, has led to deforestation when citizens scavenged for firewood; pollution of Hrazdan (Razdan) and Aras Rivers; the draining of Sevana Lich (Lake Sevan), a result of its use as a source for hydropower, threatens drinking water supplies; restart of Metsamor nuclear power plant without adequate (IAEA-recommended) safety and backup systems.

Major International Environmental Agreements: A party to Conventions on Air Pollution, Biodiversity, Climate Change, Desertification, Hazardous Wastes, Nuclear Test Ban, Ozone Layer Protection, Wetlands. Has signed, but not ratified: Air Pollution-Persistent Organic Pollutants.

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar and wind electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

**GDP based on EIA International Energy Annual 1998

ENERGY INDUSTRIES

Gas Company: Armrosgazprom

Major Ports: None

Major Oil and Gas Fields: None

Major Pipelines: North Caucasus-Transcaucasus natural gas pipeline from Russia through Georgia to Yerevan. A second gas pipeline from Azerbaijan was closed after fighting began between Azerbaijan and Armenia.

Major Refineries (crude oil capacity): None

State Electric Utility: Armenergo

Major Power Plants (capacity): Yerevan (Metsamor) nuclear plant (2 units/815 MW total); Hrazdan oil/gas plant (1,110 MW); Yerevan heat/power plant (550 MW); Sevan-Hrazdan hydroelectric plant and smaller plants (925 MW).

Sources for this report include: CIA World Factbook 2000; U.S. Department of Commerce's Business Information Service for the Newly Independent States (BISNIS); Economist Intelligence Unit ViewsWire; U.S. Energy Information Administration; Oil and Gas Journal; Petroleum Economist; Radio Free Europe/Radio Liberty; Reuters; WEFA Eurasia Economic Outlook; press reports.

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[2000 CIA World Factbook: Armenia](#)

[U.S. Agency for International Development: Armenia Energy Sector Program](#)

[Radio Free Europe/Radio Liberty](#)

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